

-80. An improved method of cloning a non-human mammal by nuclear transfer which includes the introduction of a donor cell or nucleus into an enucleated oocyte wherein the improvement comprises using as the donor cell or nucleus a somatic cell or cell committed to a somatic cell lineage capable of division or a nucleus isolated therefrom.

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81. An improved method of cloning a non-human mammal by nuclear transfer which includes the introduction of a donor cell or nucleus into an enucleated oocyte wherein the improvement comprises using as the donor cell a somatic cell, cell committed to a somatic cell lineage, or a nucleus isolated therefrom capable of division which has been genetically modified to comprise at least one addition, substitution or deletion modification.

82. A method of cloning a non-human mammal by nuclear transfer comprising the following steps:

(i) inserting a desired non-human somatic cell, cell committed to a somatic cell lineage, or a nucleus isolated therefrom into a non-human mammalian enucleated oocyte under conditions suitable for the formation of a nuclear transfer (NT) unit;

- (ii) activating the resultant nuclear transfer unit;
- (iii) culturing said activated NT unit until greater than the 2-cell developmental stage; and
- (iv) transferring said cultured NT unit to a host non-human mammal such that the NT unit develops into a fetus.

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cont'd 83. The method of Claim 82, wherein the fetus is further developed into an offspring.

84. The method of Claim 82, wherein a desired DNA is inserted, removed or modified in said somatic cell, cell committed to a somatic cell lineage, or nucleus, thereby resulting in the production of a genetically altered NT unit.

85. The method of Claim 84, which further comprises developing the fetus into an offspring.

86. The method of Claim 80, 81 or 82, wherein the donor cell or nucleus is isolated from mesoderm.

87. The method of Claim 80, 81 or 82, wherein the donor cell or nucleus is isolated from endoderm.

88. The method of Claim 80, 81 or 82, wherein the donor cell is isolated from ectoderm.

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89. The method of Claim 80, 81, or 82, wherein the donor cell or nucleus is a fibroblast cell or cell nucleus.

90. The method of Claim 80, 81 or 82, wherein the donor cell or nucleus is isolated from an ungulate.

91. The method according to Claim 80, 81 or 82, wherein the donor cell or nucleus is isolated from an ungulate selected from the group consisting of bovine, ovine, porcine, equine, caprine and buffalo.

92. The method according to Claim 80, 81 or 82, wherein the donor cell or nucleus is obtained from a non-human mammalian fetus.

93. The method according to Claim 80, 81 or 82, wherein the donor cell or nucleus is an adult non-human mammalian cell or cell nucleus.

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and
94. The method according to Claim 80, 81 or 82, wherein the donor cell or nucleus is selected from the group consisting of epithelial cells, neural cells, epidermal cells, keratinocytes, hematopoietic cells, melanocytes, chondrocytes, lymphocytes (B and T lymphocytes), erythrocytes, macrophages, monocytes, mononuclear cells, fibroblasts, muscle cells, and nuclei isolated therefrom.

95. The method according to Claim 80, 81 or 82, wherein the donor cell or nucleus is obtained from an organ selected from the group consisting of skin, lung, pancreas, liver, stomach, intestine, heart, reproductive organ, bladder, kidney, and urethra.

96. The method of Claim 80, 81 or 82, wherein the oocyte is matured *in vitro* or *in vivo* prior to enucleation.

97. The method according to Claim 82, wherein the oocyte is matured *in vitro* prior to enucleation.

98. The method according to Claim 80, 81 or 82, wherein the oocyte is enucleated by microsurgical methods.

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99. The method according to Claim 80, 81 or 82, wherein the oocyte is enucleated about 10 to 40 hours after initiation of *in vitro* maturation.

100. The method according to Claim 80, 81 or 82, wherein the oocyte is matured *in vivo* prior to enucleation.

101. The method according to Claim 80, 81 or 82, which is used of clone a bovine embryo or offspring.

102. The method of Claim 101, wherein said bovine embryo or offspring is transgenic.--

REMARKS

Entry of the foregoing amendments, reconsideration and reexamination of the subject application, as amended, pursuant to and consistent with 37 C.F.R. §1.112, and in light of the remarks which follow, are respectfully requested.